CLAIMS

1 – A method of optimizing scheduling in a communications network of CDMA type comprising one or more base stations and one or more mobile
5 users, the signals exchanged being composed of one or of several frames consisting of slots s, characterized in that it comprises at least the following steps :

a) position an analysis device comprising one or more reception pathways suitable for detecting the base stations received at a
10 measurement point by means of multisensor synchronization,

b) for each detected base station, estimate the propagation channel, $h(0, s)$, ..., $h(L-1, s)$, between the measurement point and the device, with L the length of the propagation channel,

c) on the basis of the power of the paths returned by the channel
15 estimation, estimate the received powers Pi for all the detected base stations,

d) determine the base station or stations of highest levels which define a group of active stations {Gsa},

e) on the basis of the results obtained in steps a) to d), estimate for
20 each base station of the group of active stations {Gsa}, the reception filter g (0, s, a) implemented by a mobile situated at the measurement point for the reception of the station considered,

f) estimate, for each slot s and each antenna configuration a of the mobile, the ratio E_s/I_0, on the basis of the estimates of the
25 propagation channel, and deduce therefrom the interference factor IF associated with the mobile placed at the measurement point,

g) determine the services that can be ensured at the measurement point and compare the value of the interference factor IF obtained in step f) with the threshold values dependent on each type of
30 service.

2 – The method as claimed in claim 1 characterized in that the network is a UMTS or IS95 or CDMA2000 network.

3 – The method as claimed in claim 2 characterized in that the step of detection of multisensor synchronization for a UMTS FDD application comprises the following steps :

1 – detection of the sequences of primary synchronization (P-SCH) present
5   at the start of each slot of the UMTS FDD frame,

2 – detection of the sequences of secondary synchronization (S-SCH) present at the bit rate of each slot of the UMTS FDD frame and determination of the scrambling code group,

3 – detection of the scrambling sequence used by the detected base station.
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4 - The method as claimed in claim 1 characterized in that the power Pi is expressed in the following manner :

$$Pi = \frac{1}{Npath * Nslot} \sum_{s} \sum_{i} \mathbf{h}(i,s)^{H} \mathbf{h}(i,s)$$

15   where $h(i,s)^{H}$ corresponds to the conjugate transpose of the vector $h(i,s)$, $Nslot$ to the number of slots on which the estimation is carried out and N_{path} to the number of antennas of the network of sensors of the device.

5 – The method as claimed in claim 2 characterized in that the receiver of a
20   mobile station is a Rake receiver having M fingers and in that the estimation of the reception filter is performed in the following manner :

- $g(k_{i},s,a) = h(k_{i},s,a)$ with $i=1,...M$, the indices k_{i} corresponding to the M paths of highest power,

- $g(k_{i},s,a) = 0$ otherwise.

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6 – The method as claimed in claim 1 characterized in that the value of the ratio E_{s}/I_{o} is determined on the basis of the estimates of the propagation channel :

$$E_{s}/I_{o}(s,a) = \frac{Nu \times Pu}{P_{s}\alpha(s,a) + \sum_{i} P_{si}\beta_{i}(s,a) + \sigma^{2}\gamma(s,a)}$$

30   with

$$\frac{\sum_{\substack{m=-L \\ m \neq 0}}^{L} \left| R_{gh}(m,s,a) \right|^2}{\left| R_{gh}(0,s,a) \right|^2} = \alpha(s,a) \text{ the orthogonality loss factor.}$$

$$\frac{\sum_{m=-L_i}^{L_i} \left| R_{gh_i}(m,s,a) \right|^2}{\left| R_{gh}(0,s,a) \right|^2} = \beta_i(s,a) \text{ the extracellular interference factor of station } i$$

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$$\frac{\left| R_{gg}(0,s,a) \right|}{\left| R_{gh}(0,s,a) \right|^2} = \gamma(s,a)$$

and

$$R_{gh}(m,s,a) = \sum_{k=0}^{L-1} \mathbf{g}(k+m,s,a)^H \mathbf{h}(k,s,a)$$

$$R_{gh_i}(m,s,a) = \sum_{k=0}^{L_i-1} \mathbf{g}(k+m,s,a)^H \mathbf{h}_i(k,s,a)$$

$$R_{gg}(m,s,a) = \sum_{k=0}^{L_i-1} \mathbf{g}(k+m,s,a)^H \mathbf{g}(k,s,a)$$

for $m = -L, \ldots, L$.

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7 – The method as claimed in claim 6 characterized in that the interference factor IF is determined in the following manner :

$$IF(s,a) = \frac{1}{\alpha(s,a) + \sum_i \beta_i(s,a)}$$

15   8 – The method as claimed in claim 7 characterized in that a mobile is in contact with several base stations and the interference factor is equal to the sum of the interference factors obtained for each base station of the group of active stations.

20   9 - The method as claimed in claim 1 characterized in that the mobile performs a reception on a sensor, a corresponds to the index of the antenna

taken into account in the network of N_{path} implemented by the device, and the filter g is a temporal filter.

10 – The method as claimed in claim 1 characterized in that the mobile performs a reception on several sensors, a corresponds to the indices of the antennas taken into account and the filter g is a spatio-temporal filter.